

## CONTENTS

	<b>Page</b>
<b>Preface</b>	<b>iii</b>
<b><u>Gas Sensors</u></b>	
<b>An Assessment of Microfabrication to Sensor Development and the Integration of the Sensor Microsystem</b>	<b>1</b>
<i>C.-C. Liu, E. O'Connor, K. P. Strohl, K.P. Klann, G.A. Ghurcan, G. Hunter, L. Dudik, and M. J. Shao *</i>	
<b>A Rapid, Reversible, Sensitive, and Inexpensive Gas Sensor Based on Porous Silicon</b>	<b>13</b>
<i>J.L. Gole, L. Seals, L.A. Tse, and P.J. Hesketh</i>	
<b>A Micromachined Planar Pellistor Using an Electrochemically Deposited Nanostructured Catalyst</b>	<b>24</b>
<i>P. N. Bartlett, S. Guerin, J. Marwan, J. Gardner, S. M. Lee, M. J. Willett, and S. A. Leclerc</i>	
<b>Carbon Nanotubes for Gas Sensing Applications</b>	<b>32</b>
<i>Y.M. Wong, W.P. Kang, J.L. Davidson, A. Wisitsora-at, and K.L. Soh</i>	
<b>Characterization and Thermal Failure Analysis of a Micro Hot Plate Chemical Sensor</b>	<b>36</b>
<i>B. H. Weiller, P. D. Fuqua, and J. V. Osborn</i>	
<b><u>Physical Sensors and Fabrication</u></b>	
<b>MEMS Physical Sensors for Automotive Applications</b>	<b>43</b>
<i>D. J. Monk</i>	
<b>Electrodeposited Magnetic MEMS: From Structures to Actuators</b>	<b>64</b>
<i>M.G. Allen</i>	
<b>Piezoresistive Micro-Electro-Mechanical Application in Diamond Films</b>	<b>77</b>
<i>K.C. Holmes, J.L. Davidson, and W.P. Kang</i>	

\* Keynote Talk

	Page
<b>Use of Continuous Hinges and Microrivets to Facilitate the Assembly of Three-Dimensional Polysilicon Microelectromechanical Systems (MEMS) Structures</b> <i>E. S. Kolesar, M. D. Ruff, W. E. Odom, S. Y. Ko, J. T. Howard, P. B. Allen R. J. Wilks, J. M. Wilken, J. E. Bosch, A. J. Jayachandran and N. C. Boydston</i>	84
<b>Analytical Calculations for Nanoscale Electromechanical Systems</b> <i>S.V. Rotkin</i>	90
<b>Mechanical and Magnetic Analysis of a Latching Electromagnetic Microvalve</b> <i>J.S. Bintoro and P.J. Hesketh</i>	98
<b>Influence of the Substrate on Magnetic Properties of Electrodeposited Co-Pt Permanent Micromagnet Arrays for MEMS Applications</b> <i>I. Zana and G. Zangari</i>	111
<b>Microfabrication of Nickel Cantilever Arrays and Probe Tips</b> <i>H.-J. Shin and P.J. Hesketh</i>	120
<b>Stable TiO<sub>X</sub> Sub-Micrometer Channels</b> <i>J. Scarminio, E. L. Rigan, L. Cescato, and A. Gorenstein</i>	130
 <b><u>Microfluidics</u></b>	
<b>Stereolithography on Silicon for Microfluidics and Microsensor Packaging</b> <i>L.A. Tse, D. W. Rosen, J.L. Gole, and P.J. Hesketh</i>	136
<b>Limits of Electrochemical Processes at Si Electrodes used at High Field for Aqueous Microfluidic MEMS Applications</b> <i>K. R. Zavadil, M. A. Rising, and P. C. Galambos</i>	144
<b>MEMS Bubble Actuated Valve for Interstitial Glucose Sensing</b> <i>T. W. Schneider, M. Cheng, R. C. White, J. Garra, M. Paranjape, and J. Currie</i>	153
<b>Printed-Wiring-Board Microfluidics for Thermal Management of Electronic Systems</b> <i>Y. Wang, S. A. Bidstrup, G. Yuan, and M. G. Allen</i>	161

	Page
<b>A Bi-directional Microfluidic Driving System</b> <i>C.-P. Jen, W.-D. Wu, C.-Y. Wu, Y.-C. Lin G.-G. Wu, and C.-C. Chang</i>	171
<b>Microfabricated Direct Methanol Fuel Cells to Power On-Board Integrated Circuits</b> <i>C. W. Moore and P. A. Kohl</i>	183
<b>Fabrication of Deep, Large Angle Tapered Trenches for Microelectromechanical (MEMS) Applications</b> <i>M. Rattnar, C. Mak, W. R. Merry, R. Guenther, and J. D. Chinn</i>	190
 <b><u>Chemical and Biosensors</u></b>	
<b>MEMS in Biomedical Applications</b> <i>Y.-C. Lin, C.-P. Jen, W.-D. Wu, C.-C. Yang, H.-C. Ho, C.-Y. Wu, M. Li, and M.-Y. Huang</i>	197
<b>Micro-Imaging with a Glass-coated Electrode Array</b> <i>J. R. Stetter and W. R. Penrose</i>	211
<b>Stability of Thiolated DNA on Gold-Coated Microcantilever</b> <i>K.A. Stevenson, A. Mehta, K.M. Hansen, and T.G. Thundat</i>	218
<b>Micro Oxygen Sensor with Redox Cycling</b> <i>J. Wu, J. Suls, and W. Sansen</i>	226
<b>Boron-doped CVD Diamond Planar Film as an Electrode for Electrochemical Sensing</b> <i>K.L. Soh, W.P. Kang, J.L. Davidson, Y.M. Wong, A. Wisitora-at, G. Swain, and D.E. Cliffel</i>	235
<b>Optical Manipulation of Objects in Microfluidic Devices</b> <i>E. Ata, A. L. Birkbeck, C. S. Ozkan, M. Ozkan, R. Flynn, M. Wang, and S. Esener</i>	239
<b>Author Index</b>	249
<b>Subject Index</b>	251